

Listing of the Claims:

1. (Currently amended) An electrode element for plasma torches comprising:

at least one core forming an electrode connected as a cathode, the core made of one of a metal and a metal alloy having a smaller work function enclosed by a shell part made of one of a metal and a metal alloy having a greater work function and thermal conductivity, and

a boundary layer between a core surface and said shell part formed in a graded shape of solid solutions of the two metals and or metal alloys, or an intermediate layer formed from another one of a metal and a metal alloy having a work function greater than that of said core material formed toward said core surface and toward said shell part with boundary layers in a graded transition.

2. (Currently amended) An electrode element according to claim 1, characterized in that said core is formed from[[],] one of hafnium and a hafnium alloy.

3. (Previously presented) An electrode element according to claim 1, characterized in that said core is formed from one of tungsten, zirconium, tantalum and an alloy thereof.

4. (Currently amended) An electrode element according to claim 1, characterized in that said shell part is formed from one of copper and a copper alloy.

5. (Currently amended) An electrode element according to claim 1, characterized in that said intermediate layer is formed from one of silver[[],] and a silver alloy.

6. (Currently amended) An electrode element according to claim 1, characterized in that said core is ~~formed in a rod-shaped manner~~ with a circular cross-section.

7. (Currently amended) An electrode element according to claim 1, characterized in that said core is ~~formed from~~ includes a plurality of wire-shaped elements twisted with each other.

8. (Currently amended) An electrode element according to claim 1, characterized in that said core comprises one of a star-shaped cross-section, an annular cross-section and a cross-shaped cross-section.

9. (Currently amended) An electrode element according to claim 1, characterized in that several cores ~~being arranged~~ separately arranged to form said electrode.

10. (Previously presented) An electrode element according to claim 1, characterized in that said intermediate layer is formed from a powder.

11. (Currently amended) An electrode element according to claim 1, characterized in that ~~within said shell part~~ a single-sided open cavity ~~which is~~ connected to a cooling element is formed within said shell part.

12. (Previously presented) An electrode element according to claim 1, characterized in that said electrode element is replaceably connected to a sleeve-shaped portion of copper.

13. (Currently amended) A method for the production of an electrode element for plasma torches comprising the steps of:

manufacturing said electrode element by applying by compressive forces using one of a shaping method and a joining method using a sleeve-shaped part which forms a shell part made of one of a metal and a metal alloy having a higher work function and a higher thermal conductivity and electrical conductivity; and

introducing at least one core element made of one of a metal and a metal alloy having a lower work function which forms said electrode and is connected as a cathode into the shell part.

14. (Previously presented) A method according to claim 13 wherein the step of manufacturing said electrode comprises the steps of:

manufacturing said electrode element by one of extrusion molding and hot isostatic pressing.

15. (Previously presented) A method according to claim 14 further comprising the step of:

preheating at least up to 400 °C before extrusion molding.

16. (Previously presented) A method according to claim 14 further comprising the step of:

before extrusion molding, filling a cavity between said sleeve-shaped part and said core element for the formation of said intermediate layer with one of a powdery metal and a metal alloy having a work function, thermal conductivity and electrical conductivity higher than said core material.

17. (Previously presented) A method according to claim 13 further comprising the step of:

twisting several wire-shaped elements with each other for the formation of said core.

18. (Currently amended) A method according to claim 14 further comprising the step of:

before extrusion molding, filling a cavity of said core element formed in said sleeve shape with one of a metal powder and a metal alloy which has a work function being higher than said core material.

19. (Currently amended) A method according to claim 13 further comprising the steps of:

forming said shell part, said core and said intermediate layer as one common primary product each from a powder by compression molding; and

manufacturing said electrode element ~~at least one from one primary product~~ by extrusion molding.

20. (Currently amended) A method according to claim 13 further comprising the steps of:

manufacturing at least one of said primary product sleeve-shaped part and said at least one core element by cold isostatic pressing.

21. (Currently amended) A method according to claim 13 comprising the steps of:

forming a contour on an outer circumferential surface of said shell part for a positive joint with a sleeve-shaped copper part.

22. (Previously presented) A method according to claim 13 further comprising the step of:

forming a single-sided open cavity within said shell part by backward extrusion.